TAB B

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers	)	CC Docket No. 01-338
	)	
	)	
Implementation of the Local Competition Provisions of the Telecommunications Act of 1996	)	CC Docket No. 96-98
	)	
	)	
	)	
Deployment of Wireline Services Offering Advanced Telecommunications Capability	)	CC Docket No. 98-147
	)	

REPLY DECLARATION OF RICHARD N. CLARKE AND JOHN C. DONOVAN ON BEHALF OF AT&T CORP.

I. QUALIFICATIONS.

A. **Richard N. Clarke.**

1. My name is Richard N. Clarke. My business address is 295 North Maple Avenue, Basking Ridge, NJ 07920. I am the same Richard N. Clarke that filed a declaration on behalf of AT&T Corp. ("AT&T") in this proceeding on April 5, 2002.

B. **John C. Donovan.**

2. My name is John C. Donovan. My business address is 11 Osborne Road, Garden City, NY 11530.

3. I am currently President of Telecom Visions, Inc., a firm that specializes in providing expert analysis relating to telecommunications industry planning, engineering and construction. I have provided extensive expert testimony before the Federal Communications Commission ("Commission") and in 23 state jurisdictions. Before becoming President of Telecom Visions, Inc., I was employed by NYNEX (which is now part of Verizon Communications) for over 24 years in a variety of technical line and staff positions. During my employment with NYNEX, I obtained detailed expert knowledge of local telephone network planning, engineering, and construction practices.

II. ASSIGNMENT AND SUMMARY OF CONCLUSIONS.

4. We have been asked to evaluate three studies that purport to quantify alleged negative impacts of unbundling obligations on the incentives of incumbent local exchange carriers ("ILECs") to deploy facilities, particularly facilities that can be used to support "broadband" services. As we explain below, each of these studies is fundamentally flawed and should be accorded no weight by the Commission.

5. The first study is presented in a report prepared by Cambridge Strategic Management Group entitled, "Assessing the Impact of Regulation on Deployment of Fiber to the Home," (hereinafter "CSMG Report") on behalf of Corning Inc. ("Corning"). The CSMG Report attempts to determine the costs that an incumbent LEC would incur and the revenues that it would generate in installing fiber-to-the-home ("FTTH") as part of a network overbuild. CSMG Report at 3. It then suggests that the percentage of households that could profitably be served with FTTH declines dramatically due to the ILECs' "costs" of adhering to

existing unbundling obligations. *Id.* at 4. Based on this conclusion from the CSMG Report, Corning argues that the Commission should eliminate unbundling obligations on fiber loops, and thereby (supposedly) promote the deployment of broadband services. Corning at 10-22.

6. The CSMG Report, even if it were executed correctly, does not generate results that the Commission can use in the exercise of its public interest responsibilities. This is because the study is able to generate a positive business case for FTTH only by assuming: a) that regulatory commissions will eliminate unbundling restrictions on ILEC-deployed fiber loops; b) that regulatory commissions will free ILECs of existing price controls over basic retail telephone services; and, c) that ILECs will be allowed to discriminate by supplying high quality FTTH only to high income neighborhoods located within 12,000 feet of the central office, while leaving poor or distant residences unserved. In short, the CSMG study assumes that commissions will grant the ILECs maximum freedom to exercise their monopoly power.

7. In any event, the study's analysis is not executed correctly. CSMG concludes that current unbundling obligations will dramatically reduce the number of households to which incumbent LECs could profitably deploy FTTH. But it reaches this conclusion only by systematically overstating the revenues incumbent LECs would derive from FTTH, while systematically understating the costs of FTTH, and most critically, by mis-stating the economic impact that unbundling obligations have on the deployment of FTTH. *See infra* Part III.

8. The second study is a numerical analysis proffered by the Progress and Freedom Foundation ("P&FF"). The entirety of this analysis is the reproduction of several statistics from a financial analysts' report distributed by Commerce Capital Markets ("CCM").[1] The CCM Report attempts to compute average embedded ILEC revenues and costs per "access line," and to compare these embedded revenues and costs to UNE-P prices. The CCM Report finds its calculated measures of embedded revenues and costs to fall significantly short of current UNE-P prices. Based on this claimed showing by CCM that unbundling is financially damaging to the ILECs, the P&FF concludes that unbundling "discourag[es] and delay[s] investment by incumbents," particularly for "new facilities investment in fiber to the home." P&FF at 31, 35.

9. Grave errors in the CCM Report fatally undermine P&FF's conclusion that UNE-P prices are but a fraction of embedded revenues and costs, or that unbundling will be financially disastrous for the ILECs. Although the CCM Report tries to compare UNE-P prices to embedded revenues and costs, "the embedded revenues and costs" measured in the CCM Report are not those derived from facilities that are used to provide only basic circuit-switched services (and are thus addressable

[1] P&FF cites the CCM report entitled "Status and Implications of UNE-Platform in Regional Bell Markets," issued on November 12, 2001. *See* P&FF at 22 n.42. Because of stale data and errors contained in that November report, the report has been superceded by an April 15, 2002 CCM report by the same authors entitled, "The Status of 271 and UNE-Platform in the Regional Bells' Territories." Because the conclusions of the two CCM reports are basically the same, and because we assume that the P&FF does not wish to independently support the data and results that were contained in the now superceded CCM report, in our Declaration we analyze and critique only the more recent CCM report.

by UNE-P). Rather, the CCM Report's figures include very substantial revenues and costs attributable to non-circuit switched services, such as special access, dedicated private line services, packet switched data services, and ancillary services such as voicemail. Further, CCM also fails to eliminate retail-related revenues from its analysis, and fails to eliminate costs that should not be considered when examining the profitability of a wholesale offering like UNE-P. Properly analyzed, the data show that UNE-P prices that ILECs receive from the sale of wholesale lines would be similar in profitability to the lines that they currently sell at retail. *See infra* Part IV.

10. The third study is sponsored by the High Tech Broadband Coalition ("HTBC"). It is contained in a "white paper" authored by John Haring and Jeffrey Rohlfs entitled "The Disincentives for Broadband Deployment Afforded by the FCC's Unbundling Policies" (hereinafter "HR Report"). Haring and Rohlfs purport to model the economics of mass DSL deployment capable of supporting speeds up to 1.5 Mbps. HR Report at 19. They describe two "scenarios" – one in which "killer" broadband applications do not develop and DSL prices remain "low," and one in which such applications do emerge and where ILECs are able to charge much higher prices. *Id.* at 19-20. Haring and Rohlfs conclude that a competitive carrier purchasing UNEs will obtain a cost-free "real option" that permits it to undercut the ILEC when killer broadband applications develop, while avoiding any cost or risk whatsoever if those applications do not develop. Based on this conjecture, Haring and Rohlfs (and the HTBC) arrive at their final policy

prescription: that DSL can only be profitably deployed if the ILECs are able to charge high prices for it, a result they say will not occur if competitive carriers are allowed to gain unbundled access to ILEC "DSL UNEs." *Id.* at 20.

11. Aside from the arbitrary nature of the parameters chosen by Haring and Rohlfs in their example, there are two major flaws in their method. The first is that TELRIC-based UNE rates do not ignore risk. If (as Haring and Rohlfs seem to assume) the placement of broadband plant is mandatory, and must be done before knowing whether broadband will be desired by customers, and if the risk that broadband will not be desired is high, then it is true that UNE rates that do not reflect risks, such as those assumed by Haring and Rohlfs, will result in a sure loss for ILECs. But because the cost of capital and depreciation rates incorporated into TELRIC do account for the risks faced by the ILEC (and are not independent of it), TELRIC-based rates will "equilibrate the market" and ensure that sales of UNEs to competitors do not result in a sure loss for the ILEC, as Haring and Rohlfs claim.[2]

12. The second flaw in the Haring and Rohlfs analysis is that it, like the CSMG analysis, assumes that an ILEC must be able to extract unrestricted monopoly profits from DSL in perpetuity in order to have an incentive to deploy DSL. The

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[2] Although competitive TELRIC pricing does not assure ILECs of an *ex ante* loss on their sale of UNEs, it also cannot guarantee them an *ex ante* economic (*i.e.*, supra-normal) profit. Only a regression to monopoly rate-of-return-on-ratebase regulation can accomplish that. This, of course, is completely inconsistent with any notion of substituting competitive discipline of local markets for regulatory discipline.

Commission's public interest responsibilities clearly prevent it from turning a blind eye to the ILECs' exercise of market power. In any event, there is simply no way to square the Haring and Rohlfs' analysis with actual market experience. ILECs have already voluntarily and extensively deployed DSL under existing unbundling obligations. Thus, Haring and Rohlfs' claims that such deployment is only possible when those unbundling obligations are eliminated, and when ILECs can earn monopoly rents, is refuted by the ILECs' own actions.

III. THE CSMG REPORT IS FUNDAMENTALLY FLAWED AND SHOULD BE ACCORDED NO WEIGHT.

13. As noted, the CSMG study purports to model the costs of deploying, and the revenues derived from, FTTH. Based on its analysis, the CSMG study concludes that FTTH can be deployed economically in the near term to a large number of households – if, and only if, current "unbundling" obligations are lifted. As we explain in detail below, CSMG can reach this incorrect result only by systematically: a) overstating revenues from FTTH; b) understating costs of FTTH; and c) understating the "wholesale" revenues ILECs would earn when leasing fiber loops to competitors. These flaws may be only the proverbial tip of the iceberg, as key aspects of the CSMG study are not documented or disclosed.

14. Even if the all these problems could be corrected, the CSMG approach could still not serve as a sound basis for public policy. CSMG assumes that ILECs can cream-skim by identifying and restricting their build-out of FTTH only to the wealthiest wire centers, and only to the most profitable households served by

those wire centers.[3] CSMG Report at 19, 26. Thus, even in its "free market" scenario, CSMG appears to find that FTTH can be deployed profitably only in high income central offices, and then only to households that are within 12,000 feet of those central offices. *Id.* at 50. For these reasons, the "business case" developed by CSMG for the deployment of FTTH is limited to only the most profitable subset of those customers that can already obtain the highest speed DSL-based services.[4] Indeed, even under its "free market" scenario, CSMG finds that only 8% of wire centers and 31% of households nationwide could be served profitably by FTTH. This is *far less* than even current DSL availability. *See* AT&T Comments at 78-80 (Apr. 5, 2002) (citing deployment of DSL by the ILECs).[5]

15. In addition, CSMG appears to assume that regulatory commissions, by relieving the ILECs of their unbundling obligations, would also leave them free to extract

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[3] This is because CSMG assumes that the revenues an ILEC will receive from its provision of FTTH-based services are directly related to the income level of the households the ILEC selects for FTTH construction, and because the costs of passive FTTH vary in proportion to the distance from a customer location to the central office. *See* CSMG Report at 19, 26.

[4] CSMG assumes that DSL can only be deployed to customers residing within 12,000 feet of a central office, but that assumption is mistaken. As the Commission has found, basic copper DSL technology is capable of providing service to customers much further away, *Second 706 Report*, 15 FCC Rcd. 20913, ¶ 38 (2000), and fiber-fed NGDLC (such as envisioned in SBC's Project Pronto) can be used to provide DSL to practically any household.

[5] The results provided for Amarillo, Texas make this clear. CSMG reports that there are 39,000 households in Amarillo, with 27,191 being within 12,000 feet of the central office. *Id.* at 18, 20, 22. But even the "unregulated" business case developed by CSMG appears to find it profitable to deploy FTTH only to the most profitable 16,000 households out of the 27,191 households that are within 12,000 feet of the central office. *Id.*

monopoly level margins of some 70% on voice services. CSMG Report at 19, 23. In other words, CSMG is able to inflate the potential success of FTTH by assuming that an ILEC in the "free market" scenario would be permitted to raise rates and revenues for basic services to achieve a 70% margin, through regulatory acquiescence that limits competition and removes retail price limitations. On the other hand, CMSG equates unbundling with the "loss" of these extraordinary returns on investment (because intramodal competition would cause the ILEC to lose market share) thereby making the "free market" business case look much more advantageous than the "regulated" business case in which unbundling is required. *See* CSMG Report at 12, 40-41.

16. Although from a shareholders' perspective, we sympathize with CSMG's hypothesis that the ILECs' goal is to preserve and enhance their monopoly revenues – and that this would be facilitated greatly if they were able to shut competitive carriers out of the market by deploying FTTH. However, we disagree strongly with CSMG's implicit assumption that this consideration should drive Commission policy. The clear purpose of the Telecommunications Act of 1996 is to "eliminate the monopolies enjoyed by the inheritors of AT&T's local franchise . . . both as an end in itself and an important step toward the Act's goal of boosting competition in broader markets." *Verizon Communications Inc. v. FCC*, 122 S. Ct. 1646, 1654 (2002). It would be inconsistent with the Act for the Commission to permit exclusionary policies on the basis of preserving ILEC revenues. Thus, in addition to likely being futile, it would be highly improper to

"encourage" ILECs to deploy broadband services more extensively by permitting them to entrench more deeply their existing monopolies.

17. *Overstating Revenues from FTTH.* CSMG overstates the "incremental revenues" that an ILEC would derive from FTTH in several independent ways that we detail below. These overstatements are a critical driver of CSMG's conclusion as to the number of homes where FTTH can be profitably deployed. Obviously, all else being equal, assumed higher revenues increase the number of homes where it makes economic sense to deploy FTTH.

18. As we discuss in greater detail below, CSMG assumes that an ILEC that deploys FTTH can sell a complete suite of video, long distance, POTS, high speed data services and "other" services. *See* CSMG Report at 40, 48-49. Using the information provided in the CSMG Report, the following table sets forth the FTTH-based revenues projected by CSMG. (CSMG assumes that the ILEC begins offering FTTH service in 2003 and models the first ten years of service). These assumed revenues cannot withstand scrutiny.

CSMG "Free Market" Scenario								
	2003			2013			10-Year Difference	
	Monthly Revenue	Market Share	Weighted Revenue	Monthly Revenue	Market Share	Weighted Revenue	Weighted Revenue	Percent Change
Basic Cable + Video on Demand	$57.00	3.0%	$1.71	$82.00	40.0%	$32.80	$31.09	1818.1%
Other Services	$4.00	0.5%	$0.02	$10.00	26.0%	$2.60	$2.58	14,344.4%
Long Distance	$17.00	5.0%	$0.85	$11.00	35.0%	$3.85	$3.00	352.9%
High Speed Data	$50.00	40.0%	$20.00	$40.00	55.0%	$22.00	$2.00	10.0%
POTS	$31.00	87.0%	$26.97	$38.00	77.0%	$29.26	$2.29	8.5%
Total	$159.00		$49.55	$181.00		$90.51	$40.96	82.7%

19. We begin with CSMG's treatment of video revenues, which is the largest source of assumed revenue in its study. As the table shows, CSMG assumes that the installation of unregulated FTTH causes the incumbent's market share for "Basic Cable" and "Video on Demand" to increase from 3% (sold at a price of $57 per month) all the way up to 40% market share (sold at a price of $82 per month). This defies common sense. These presumed FTTH video revenues are well in excess of what established cable and DBS competitors charge and, contrary to the normal functioning of markets, CSMG assumes that a new entrant can both charge more than the incumbent providers *and* will gain substantial market share. Traditional economic theory suggests that the addition of new competitors should have a negative, not a positive, effect on prices.

20. Similarly, "other revenues" – which, while never explained in detail, include items like "CPE and set-top box fee" – are assumed to increase by 250% (from $4 per month to $10 per month) over the 10 year study period. Again, even though the FTTH ILECs are assumed to charge more for these items than is currently received by cable and DBS companies, their "take rates" in their addressable market climb from a 0.5% market share to a 26% market share

21. FTTH voice revenues also appear overstated. CSMG asserts that voice-only local services currently generate revenues of $31 per month per household, which will rise to $38 over the study period, and during this same period, long distance revenues will decline from $17 to $11. Thus, overall voice revenues will rise over the study period by $1 per month per household. However, CSMG appears not to

recognize that very substantial numbers of current voice lines ("second" lines in particular) are used for analog modem access to the Internet. This is exactly the service that FTTH's provision of advanced DSL services will cannibalize. Thus, it is unlikely that voice revenues per household would rise under FTTH – unless, of course, regulators lift existing retail pricing constraints from the ILECs.

22. In addition to these aggressive assumptions about revenue increases under FTTH, CSMG independently assumes that ILECs will be able to sustain gross margins of 70% for voice, 56% for data, 50% for video and 70% for "other" services. CSMG Report at 23. Because CSMG never provides a precise definition of how it measures gross margins, it is impossible to evaluate precisely whether these estimates are reasonable – but they appear to be extremely high. This is especially true for video and data services that would be offered in competition with cable, DBS and other wireless companies. Generally, gross margins are figures derived directly from assumed levels of revenues and costs. However, CSMG appears not to link its assumed levels of gross margin to its assumed levels of revenue and cost. CSMG Report at 19-23.

23. Overall, as the table shows, CSMG assumes that weighted revenue increases of 82.7% over ten years, from $49.55 per month to $90.51 per month. If the assumptions that appear to underlie these revenue forecasts are replaced with more realistic assumptions, much more moderate levels of FTTH revenue would be forecast, resulting in a much lower percentage of homes being FTTH-profitable under CSMG's "free market" scenario.

24. *Understating Costs of FTTH.* CSMG also understates FTTH costs, which, like its flawed treatment of revenues, artificially inflates the number of households that CSMG concludes can profitably be served by FTTH.

25. As a threshold matter, CSMG provides only vague information about the costs that it expects an ILEC to incur in deploying FTTH. As for capital expenditures, CSMG compartmentalizes costs into nine categories: 1) Initial CO Capex; 2) Variable CO Capex (per Homes passed); 3) Headend (serves 50 COs); 4) Aerial feeder (per foot); 5) Buried feeder (per foot); 6) Aerial distribution (per foot); 7) Buried distribution (per foot); 8) Drop (per home, equipment only); and 9) Customer Provided Equipment ("CPE") (per home). CSMG Report at 21. It seems highly unlikely that CSMG has considered every piece of equipment necessary for FTTH loop architecture within its nine categories identified above. For example, all of the cost of the optical "line cards" necessary to drive this loop network would appear to need to be covered by the assumed $20 per home "variable CO capex." *Id.* This is clearly wrong. Current GR-303 electrical line cards are today at least twice as expensive. The Commission's Synthesis Model costs these GR-303 voice-only cards at $74.98 per line[6] – and current combination voice/ADSL cards are roughly twice as expensive as voice-only cards. Thus, it is a virtual certainty that the voice/ADSL/video cards that would be needed to provide the multiple services contemplated in CSMG's revenue

[6] *Inputs Order*, 14 FCC Rcd. 20156, App. A1, Excel Spreadsheet Tab FDCOST, Cells B8, B10, and B12 (1999).

projections would cost an order of magnitude more than CSMG's $20 per home assignment of "variable CO capex." Similarly, $200,000 for "fixed CO capex" also appears substantially understated. This figure would have to cover not only the cost of Voice Gateways and ATM switches needed to handle just the voice and data services carried by the FTTH network, but also whatever video switching encoding and transmission facilities might be needed. These figures cannot be afforded any serious credence unless they are itemized so one can understand whether entire pieces of necessary equipment may have been omitted or whether the costs of the assumed equipment are correct.

26. In any event, CSMG appears to make a number of mistakes in calculating the costs for deploying FTTH that cause these costs to be even more severely understated. For example, CSMG appears to have underestimated the costs of the outside plant and household termination equipment necessary for FTTH. In order to provide FTTH, fiber would not only need to be deployed in the feeder and distribution portion of the network, but individual strands would need to be spliced and "dropped" to the home.[7] These "fiber drop" investments are a significant portion of overall loop investment.[8] CSMG claims, on the basis of

[7] The passive optical network envisioned by CSMG extends all the way into each customer's house – where an assumed $600 of CPE is employed to terminate the fiber and to split and decode the various signals that it carries. Presumably, voice signals would be converted into a 300 – 3300 Hz. analog electrical waveform, data signals would be converted into electrical ATM or Ethernet signals, and video signals would be converted into electrical RF-level signals. But because existing drops into houses consist of copper pairs, not optical fibers, these copper drops would need to be removed and replaced by optical fiber drops.

[8] In the Commission's Synthesis Model, investment in drop cables, terminals and NIDs amounts to, roughly, 12% of all loop investments.

their network engineering experience, that a fiber drop costs only $40.[9] CSMG Report at 21. This, however, is far less than the cost of a typical copper drop cable[10] – let alone the drop terminal and NID.[11] Although it is possible that this figure is intended to represent only the cost of the fiber drop cable material, it is certainly inadequate to cover any cost of installation, drop terminals and fiber splicing.[12] In fact, just the fiber pigtail connectors at the end of the fiber drop are likely to cost from $18 to over $60.[13]

27. CSMG also appears to have assumed an unrealistic percentage of aerial plant. This is an important driver of costs because underground or buried plant is more expensive to deploy. CSMG states, without supporting data, that 66% of distribution plant in the U.S. is aerial and that its Amarillo test case conservatively assumed 46% aerial plant. However, data from all companies reporting ARMIS information to the Commission reveal that only 32.0% of all copper and fiber

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9 CSMG qualifies its $40 drop cost as "equip only." CSMG Report at 21.

10 For example the Commission's Synthesis Model assumes a cost of $56 for a 100-foot copper drop. *Inputs Order,* App. A1, Excel Spreadsheet Tab FDCOST, cell B4.

11 In the Commission's Synthesis Model, investment in copper drop cables, terminals and NIDs amounts to over $77 per line.

12 Fiber splicing requires melting the ends of adjacent "hair-thin" glass fibers in precise alignment. It generally requires at least 20 minutes of technician time for setup, fiber-joining, and closure, with an estimated cost of $20 or more per splice for labor alone.

13 See, for example, fiber patch cord material prices of $18.50 per single fiber at http://www.infinity-cable.com/icp_fiber_scsc_s.htm, or $66.03 for a duplex fiber patchcord at http://www.atcomservices.com/acb_atc/showdetl.cfm?&DID=11&Product_ID=317&CATID=6.

cable is aerial.[14] The CSMG Report's aerial cable percentages also exceed those in the Commission's Synthesis Model, which assumes that only 10% to 40% of distribution cable is aerial.[15] Thus, it appears that by overstating the percentage of fiber cable construction that it assumes will be aerial, CSMG has understated fiber cable costs associated with FTTH.

28. More broadly, significant portions of the network being "costed" by CSMG appear to be inadequate for its stated multiple purposes (voice, data, video, *etc.*). To provide the very high bandwidth services being contemplated by CSMG, an ILEC would not only need to deploy fiber to the home, but it would also have to build video switching and distribution services, and build more extensive interoffice data and video transmission facilities to handle the increased traffic. To this end, CSMG provides less than $250,000 per wire center for fixed investment. It is impossible to know without access to CSMG's actual cost studies whether CSMG has provided adequately for these facilities, or reflected any of the additional interoffice costs that would have to be incurred by an ILEC to offer 20 Mbps data and video services, and multiple derived POTS lines, but it seems doubtful.

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[14] FCC ARMIS data for all ILECs is available at http://gullfoss2.fcc.gov/cgi-bin/websql/prod/ccb/armis1/forms/armis.hts (43-08 Report: *Operating Data Report*, Table I.a. *Outside Plant Statistics – Cable and Wire Facilities*).

[15] *Inputs Order* ¶ 228.

29. Overall, CSMG says that FTTH can be deployed to its addressed customer set for as little as $2,200 per subscriber. CSMG Report at 22. *See also* Corning at 14 (claiming FTTH can be deployed for as little as $300 to $1250 per home). CSMG's number seems implausibly low on its face, but it is still very high when compared with the capital investments necessary to provision narrowband local networks. For example, average investment per loop is slightly less than $900 in the current Synthesis Model – and this is for loops reaching close to 95% of the population – not just the cheapest 31%. Even if CSMG's $2,200 figure were correct for the cheapest 31% of all loops, this amount still represents only part of the total upgrade costs required to provide functional FTTH services. According to Eagle Broadband, the very competitive local exchange carrier ("CLEC") that CSMG cites as the largest FTTH provider (*see* CSMG Report at 51), to fully utilize the capabilities of its "ClearWorks" service, *additional* intelligent home and structured wiring within the home is required that would add considerable costs.[16] Indeed, these additional costs could range into the thousands of dollars.[17]

30. *Biases in the "Regulated" Case.* Even if one were to accept all of CSMG's faulty predictions about how much it would cost to deploy FTTH, and how much money an ILEC would make, Corning's public policy recommendation that unbundling should be scrapped is fatally undermined if the profitability of FTTH does not

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[16] *See* http://www.clearworks.com .

[17] *See* http://www.time.com/time/europe/digital/2001/archive/032299_smarthouse.html or http://www.washtimes.com/homeguide/facts/623.html.

improve significantly should the Commission lift its unbundling requirements. In reality, unbundling does not "tip" an otherwise profitable business case for FTTH into unprofitability. Only by making a number of incorrect assumptions that understate wholesale revenues that an ILEC would garner from selling unbundled fiber loops can CSMG conclude that unbundling obligations reduce the profitability of FTTH.

31. First, and most critically, CSMG assumes that wholesale UNE-loop revenue from the sale of an unbundled FTTH loop is $20 per month. CSMG Report at 41. CSMG says it arrived at this figure because "[m]onthly UNE wholesale voice line prices are approximately 1% of cumulative CapEx per household" and because the "CapEx per household addressed under FTTH is approximately $2,000."[18] *Id.* at 41. Even if one accepts the $2,000 figure – and as discussed above, it is too low – the proper TELRIC-based UNE price for a FTTH loop would be much higher than $20 per month.

32. Contrary to CSMG's unsupported assertion, the charge factors relating capital investment to monthly recurring charges in TELRIC models are much higher than 1%. In the Commission's Synthesis Model, investment per (non-rural) line is $886 and average TELRIC monthly cost (assuming an 11.25% rate of return) is $23.56, which equates to a 2.66% overall monthly charge factor. Applying this

[18] We do not understand why CSMG persists with this claimed figure of $2000 per household for FTTH. The analysis adduced by CSMG shows this figure to be between $2800 and $2200, *see* CSMG Report at 22, 28 – and this just for the cherry-picked 31% of households that CSMG determines are worth serving.

charge factor to a $2,000 loop investment would mean that instead of CSMG's claim of a $20 per month rate for an unbundled fiber loop, the TELRIC price of a fiber loop would be closer to $53.[19]

33. Even this figure may underestimate the TELRIC of a UNE fiber loop. CSMG assumes a "free market" weighted average cost of capital ("WACC") to be 13%, which, it says, will rise to 15% in the "regulated" case to account for unbundling obligations. CSMG Report at 41. If a 13% WACC is inserted into the FCC's Synthesis Model, its calculated overall monthly charge factor would rise by 23 basis points to 2.89%, and if the WACC is raised to 15% (as CSMG suggests it would to reflect its claimed "costs" of regulation), the monthly charge factor would rise by a further 23 basis points.

34. In any event, although it is reasonable to assume that the cost of capital incorporated into TELRIC should reflect the full risk of CSMG's FTTH scenarios, there is no justification for claiming that *unbundling* increases the risks of FTTH, as CSMG claims. In the context of the business case being modeled, ILECs are not being required to provide FTTH, but are choosing to do so voluntarily. Thus, the primary risk ILECs face is whether there is sufficient demand for next generation super-high bandwidth services to justify the incremental costs of deploying FTTH. To the extent that the ILECs deploy

[19] Because some of the overheads in the Synthesis Model are fixed or do not scale linearly with investment, it is possible that the actual charge factor for per-line investments at the levels suggested by the CSMG report might be slightly less than 2.66% – but still certainly well above the 1% per month assumed by CSMG.

FTTH, and demand for broadband services provided over that network are weak, then the ILECs risk not being able to recover their expenditures.

35. Unbundling obligations simply do not increase that risk. No customer is less likely to buy broadband data services because of unbundling. Indeed, unbundling should *decrease* the ILECs' overall risk because ILECs would not only benefit from their own retailing efforts to convince customers to sign up for FTTH, but also from retail marketing efforts generated by CLECs. More customers would be willing to purchase FTTH-based services with multiple entities marketing those services than if the ILEC were the sole marketer. The ILECs effectively concede this when they say that they would have commercial incentives to offer wholesale broadband access to competitors. Verizon at 82 ("The widespread deployment of broadband services and facilities will require enormous investments and result in huge fixed costs. Obviously, the more traffic on the network, the easier it is to recover those costs.").

36. Even these flawed assertions that unbundling increases risk are apparently not adequate to depress FTTH deployment sufficiently in the "regulated scenario," so CSMG injects *ad hoc* multipliers for what it claims are the additional ways in which unbundling increases the costs of FTTH. For example, CSMG says that "[b]ased on interviews with ILECs, we feel a 20% increase in the cost of CO equipment (approximately $40,000 per CO) is a reasonable estimate of incremental interconnection expenses." *Id.* at 41. Similarly, CSMG endorses the incumbent LECs' claim that unbundling increases network maintenance costs by

33%. *Id.* No detail is provided as to what extra equipment or maintenance is required – let alone any documentation of its costs. Given the undocumented nature of these assertions about cost multipliers, the cost "increases" cannot be considered cognizable. *Cf.* Gerszberg Reply Dec., Part V (showing that costs of unbundling FTTH are not significant, especially compared to the total implementation cost because all that is required is ports at the central office where CLECs can pick up their traffic).

37. Just as fundamentally, CSMG fails to recognize that if these costs are efficient and would, in fact, be incurred by the ILECs, the ILECs would not be left holding the bag. To the contrary, TELRIC-based pricing permits the ILECs to recover the efficient, forward-looking costs of necessary modifications to a FTTH network to enable multiple competitors to gain access to their networks.

38. *The CSMG Study is a Black Box.* Ultimately, it is impossible to fully quantify the deficiencies in the CSMG Report in precise numbers because its sponsors have failed to provide the materials necessary to fully evaluate the CSMG Report. Critical methodological choices are not discussed, or are only summarized, key inputs used in the model are not disclosed, and because the actual "models" themselves are not provided, there is no way to replicate or verify the report's conclusions, nor can commenters run "sensitivity studies" that might reveal whether small changes in a handful of key parameters dramatically change the overall conclusions.

39. A few examples should suffice to show the shortcomings in the documentation provided by Corning. First, CSMG asserts that the Texas central offices it studies are "representative" of the United States, so that the results of its analysis can be extrapolated nationally. However, CSMG fails to provide the evidence necessary to test the validity of this dubious claim. Although CSMG provides the distributions of four factors that it claims are most important in determining the profitability of deploying FTTH (central office area, median income, household density and distribution of underground plant), CSMG Report at 32, this is insufficient for two reasons. First, the relevant measure is how all four of these measures change *together*, not separately, as CSMG reports. Second, because CSMG presents a model in which customers can be cherry-picked, "average" distributions are not important. Rather, for the purposes of CSMG's analysis, Texas would be "representative" of the U.S. as a whole only to the extent the number of Texas high income subscribers living in dense housing areas in close proximity to central offices is representative of the distribution of similar customers across the entire United States. CSMG, however, fails to provide any of the data necessary to evaluate whether its cherry-picked FTTH service areas in Texas are, in fact, "representative" of similarly cherry-picked FTTH service areas in the entire United States.[20]

[20] Also, the relevant cost and revenue functions might be non-linear. In other words, small departures from the "average" may produce dramatically different results. Thus, for example, it may be that states that have "better" characteristics than Texas from the standpoint of deploying FTTH may produce only modest increases in the overall number of households that can be served while states that have worse characteristics may produce (continued . . .)

40. Detail regarding important aspects of the way in which CSMG modeled the costs of deploying FTTH is also missing. As CSMG recognizes, the distance between a central office and a home is an important driver of cost. Thus, the proper way to model required outside plant distances is to use geocoded data to determine the quantity of outside plant that is necessary. CSMG, however, refers only in passing to a "regression" that was used to determine the required quantities of outside plant.[21] CSMG Report at 50. CSMG likewise fails to provide any detailed back-up for the quantities of outside plant that it assumes will be deployed, or for that matter, the actual costs of the facilities that it assumes will be deployed. Instead, CSMG simply presents "cost per foot" data. It is impossible to determine the amount of outside plant that is being assumed and whether all the necessary equipment is being included. *Id.* at 21. Similarly, CSMG provides only "average" per subscriber revenues and take rates without revealing how it parsed households to determine whether each individual customer would be profitable. *Id.* at 42-49. This information is important because costs of serving

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(. . . continued)
dramatically lower results. Without access to the spreadsheets used by CSMG, it is impossible to determine the linearity of the relevant cost and revenue functions.

[21] This regression appears to be based on data from the cable television ("CATV") industry. Because a FTTH plant layout requires two-way individual circuit transmissions, which is very different from CATV tapping into a passing video stream, it is unclear whether distance results from a CATV architecture are germane to a point-to-point FTTH architecture. In combination with the fact that telephone facilities pass virtually all households, while CATV services do not, this alone would suggest that CSMG's regression-based plant calculations are likely underestimated.

each particular customer will vary with the distance from the home to the central office.

41. Key architecture assumptions are likewise unexplained. CSMG says that the "number and proportion of passive optical splitters," a significant component of cost, "varies by architecture." CSMG Report at 17. That is true, but CSMG never says what architecture it assumes, or provides any detail as to the number, placement locations or types of splitters it assumed.

42. Even where CSMG attempts to document certain of its many input assumptions, it fails to provide anything that can be verified. Indeed, CSMG says that "[f]ree market revenue assumptions were built from a combination of third party sources, interviews and CSMG benchmarks" – none of which is disclosed. Even more remarkable is that CSMG states that sources for FTTH costs and revenues in the "[r]egulated" case are "assumptions [that] were primarily based on our experience and informal discussions with ILECs." CSMG Report at 40-41. At no point does CSMG actually tie a particular source to the particular data point it is supporting. Without this rigor, it is impossible either to assess the credibility of each assumption, or to determine whether different data sources have been "mixed and matched" to get the most favorable inputs levels.

IV. THE CCM REPORT RELIED ON BY THE P&FF IS FUNDAMENTALLY FLAWED AND SHOULD BE ACCORDED NO WEIGHT.

43. As noted, the CCM Report relied upon by P&FF calculates several measures of embedded per-line revenues and costs for each ILEC, and then compares these figures with revenues that the ILEC may derive from sales of UNE-P at

(presumably) TELRIC-based prices. In each instance, the CCM Report concludes that UNE-P prices are below embedded costs and revenues. Thus, because of this shortfall, P&FF concludes that ILECs will be deterred from upgrading their networks to provide broadband services. P&FF at 31, 35.

44. At the outset, it must be recognized that CCM's analysis is simply irrelevant to the determination of whether unbundling saps ILECs' incentives to invest in broadband facilities. Even if the CCM Report accurately measured each of these items, and even if the CCM's embedded revenue and cost measures really represented just the ILEC services and facilities associated with UNE-P, all this would show is that the historical embedded costs of the ILECs' facilities necessary to provide UNE-P-based telephone service are higher than their forward-looking replacement costs. As such, this analysis says nothing about what the anticipated costs of deploying *future* broadband facilities would be, and whether those new costs – if any – would be recoverable under the Commission's "TELRIC" pricing standard. In Professor Willig's April 5, 2002 Declaration, he explained why TELRIC would enable the ILECs to earn returns sufficient to compensate them for deploying broadband networks. This is particularly so because: a) the ILECs' own statements show that deploying more fiber feeder in the loop is justified *solely* with regard to capital and maintenance savings in the provision of *narrowband* services, and b) the forward-looking costs for truly "new" facilities to provide broadband services are likely to be very close to the "actual" costs of those facilities.

45. Even assuming the analysis conducted by CCM concerning UNE-P could, in theory, support P&FF's policy prescriptions for broadband, a comparison of UNE-P rates and embedded book revenues and costs is valid only to the extent that the embedded measures are relevantly defined and accurately calculated. As described in detail in Exhibit 1 to this declaration, they are not. In particular, in two independent respects, CCM's comparison mixes apples and oranges.[22]

46. First, UNE-P is principally used to provide POTS service to residential and small business customers. Thus, UNE-P does not use all the local network facilities (and associated functionalities) deployed by the ILECs. Thus, when looking to see whether UNE-P rates are sufficient, the relevant comparison is to the embedded costs and revenues of those facilities – and only those facilities – leased by a UNE-P customer. CCM does not make such a comparison. Instead, in developing its embedded per-line costs and revenues, the CCM Report effectively includes not just the costs and revenues of facilities used to provide UNE-P services, but also the costs and revenues of facilities that are *not* used to provide UNE-P, such as the facilities that are used in providing dedicated private line services, special access services or packet switched data services. In other words, CCM compares the revenues earned from UNE-P to the embedded costs and revenues of equipment used to provide capabilities well beyond those provided to a UNE-P customer. Given this, it is unsurprising that CCM's

[22] Exhibit 1 contains a detailed analysis by Dr. Clarke describing the shortcomings in the CCM Report. Rather than needlessly repeating that analysis, we summarize the results of Dr. Clarke's paper here.

comparison would lead to the conclusion that existing UNE-P rates are under-compensatory.

47. Second, the CCM Report also fails to exclude costs that an ILEC does not incur when providing a UNE-P. UNE-P is a wholesale service. However, in determining the "costs" of UNE-P, CCM includes costs attributed to ILEC *retail* functions. As this commission and many state commissions have found, ILECs avoid a significant percentage of their retail costs, such as marketing and billing costs, when providing wholesale service.[23] Again, this makes it appear as if the embedded costs of providing UNE-P are much greater than they really are.

48. In Exhibit 1, Dr. Clarke corrects these basic mistakes and compares UNE-P revenues to embedded costs and revenues on a more consistent basis. That analysis shows existing UNE-P rates to be much closer to their corresponding embedded revenues and costs than claimed by CCM. That said, it is important to stress that there is no *a priori* reason why a UNE-P rate should have to exceed appropriately defined and measured embedded costs. If anything, given the historically declining costs in providing telecommunications services, a showing that a UNE-P rate is at or above (properly calculated) embedded costs is evidence that the UNE-P rate may be too high. Rather, the point of our analysis is to show that P&FF's claim that existing UNE-P rates are only about half of embedded costs is a severe exaggeration.

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[23] Typical avoided retail cost percentages exceed 20%.

V. THE HR REPORT RELIED ON BY THE HTBC IS FUNDAMENTALLY FLAWED AND SHOULD BE ACCORDED NO WEIGHT.

49. The HR Report attempts to quantify the impact of unbundling on ILEC investment incentives in an uncertain investment environment. According to Haring and Rohlfs, unbundling is a one-way bargain that reduces potential upsides, but leaves ILECs exposed to downsides. To demonstrate this, they analogize to an oil company that drills wells. They claim that under TELRIC, a competitive oil company would have the right to purchase oil from an incumbent's wet wells, but would not have to bear any of the incumbent's costs of its dry wells. HR Report at 2-3.

50. Nothing could be further from the truth. Because TELRIC is *forward-looking* (and because, under the terms of the Haring-Rohlfs analogy, you cannot predict which wells will be dry and which will be wet), TELRIC-based rates in this context would be calculated by taking the cost of the average well (including both wet and dry) and dividing that cost by the number of barrels of oil produced (presumably, only from the wet wells). Thus, the unit cost would be based on the cost of both the dry wells and the wet wells. Furthermore, because of the uncertainty as to what proportion of a company's wells will be dry or wet, the rate of return that would be incorporated into the TELRIC price of oil would be higher than what might be incorporated into the TELRIC of a product produced by a less risky production process (*e.g.*, in a world where all wells are wet). Thus, although the competitive carriers have the right (a "call option") to buy the incumbent's oil, they must do so at a price that fully compensates the incumbent for its risk.

51. Similarly, if a competitive environment makes it more likely that an incumbent's capital will be devalued (say by entry or by more rapid technical progress), TELRIC depreciation appropriately adjusts to reflect this. However, as explained above, the provision of elements such as wholesale UNEs, in addition to ILEC's own use of these UNEs to provide retail services, expands the usefulness of ILEC networks. Thus, it is quite possible that unbundling would reduce an ILECs' risk relative to a retail-only environment.

52. Based on this flawed oil well analogy, Haring and Rohlfs develop a "business case" that they claim shows that DSL will not be deployed on a mass-market basis if it must be unbundled. They describe two "scenarios" – one in which "killer" broadband applications do not develop and DSL prices remain "low" and one in which they do develop, and the ILECs can charge much higher prices. HR Statement at 19-20. Relying on data contained in a McKinsey-J.P. Morgan report, they calculate the ILECs' costs. *Id.* at 19. They then conclude that, unless the probability of the high DSL price scenario is much greater than the low DSL price scenario, it will not be economic for ILECs to broadly deploy DSL. *Id.* at 20. This "model" is flawed at virtually every level.

53. At the outset, this example clearly proves too much. Haring and Rohlfs simply ignore the ILECs' massive deployment of DSL technology to date, including the deployment of fiber feeder to expand the number of households capable of obtaining DSL-based services. The Commission has found that "[i]n 2000, [ILECs] invested almost $29.4 billion in infrastructure," and that a "substantial

portion" of the investment was to allow "high speed or advanced data services" to be offered more broadly. *See Third Section 706 Report* ¶ 69. As a consequence of these and continuing investments, Verizon says that high-speed service can be offered on 79% of its access lines,[24] BellSouth states that 70% of its customers are DSL capable, up from 45% in 2000,[25] and SBC reports that it has expanded its DSL-capable footprint by 37% to 25 million customers in 2001 alone and that currently 60% of its households are DSL-qualified.[26] Clearly, given this massive level of investment under the current regulatory regime, a model that predicts that DSL cannot be deployed economically so long as current unbundling rules remain in effect is fundamentally flawed.

54. Haring and Rohlfs also ignore the critical fact that many of the same facilities used to provide broadband service also provide narrowband services. Thus, any

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[24] *See* News Release, *Verizon Communications Reports Solid Results for Fourth Quarter, Provides Outlook for 2002* (Jan. 31, 2002) (available at http://investor.verizon.com/news/VZ/2002-01-31_X263602.html).

[25] *See* News Release, *Bell South Captures 620,500 DSL Customers and Deploys Broadband Capabilities to More Than 15.5 Million Lines* (Jan. 3, 2002) (available at http://bellsouthcorp.com/proactive/newsroom/release.vtml?id=38723). BellSouth also claims it has widely deployed DSL technology even in relatively rural states. For example, according to recent BellSouth statements, 136 of 140 central offices in North Carolina are now capable of supporting DSL-based services. *BellSouth Makes Progress on North Carolina High-Speed Internet Service*, The News & Observer, Raleigh, N.C. Knight Ridder/Tribune Business News, (Apr. 3, 2002). BellSouth also expects to have in place 2,100 remote terminals in North Carolina by the end of the year. *Id.*

[26] *EchoStar, SBC Forge Powerful TV-Telecom Alliance*, Satellite News (Apr. 22, 2002). Even Qwest, which has the most rural territory of the ILECs, and has been the slowest to upgrade its network, can now deploy DSL-based services to 40% of households in its region. Jeff Smith, *A Dream Deferred*, Rocky Mountain News (Apr. 1, 2002).

realistic model would need to account for the substantial cost and maintenance savings achieved when ILECs enable DSL by installing more fiber and modern DLC. In fact, the very McKinsey-J.P. Morgan study cited by Haring and Rohlfs makes precisely this point, concluding that mass deployment of DSL technology by the ILECs makes good economic sense. *See* McKinsey & Company JP Morgan H&Q, *Broadband 2001*, at 68-81 (Apr. 2, 2001).

55. Even as to the particulars, the HR Report relies on flawed assumptions. First, Haring and Rohlfs assume what appear to be exogenously given costs of debt and equity. Because of this choice, their model cannot determine the conditions under which DSL can be profitably deployed. In the real world, these costs are endogenous – *i.e.*, they depend on the riskiness of retail and wholesale demand for the item. If the demand is risky, the costs are large; if it is not, they are small. Under the terms of the "business case" developed by Haring and Rohlfs, DSL investments are assumed to be very risky – because it is assumed to only make sense if "killer apps" develop – but the costs of debt and equity (which average to a 12.5% rate-of-return) are moderate. Thus, Haring and Rohlfs' use of a hypothetical exogenous cost of capital drives their results, and ensures that DSL would not be profitable unless monopoly profits can be earned.

56. Second, Haring and Rohlfs simply state that a competitive carrier's costs, if it uses a "DSL UNE," are $46.80. HR Report at 19. There is no support for this number and we cannot discern how they arrived at it. Haring and Rohlfs also say that the ILEC's cost for DSL, apart from income taxes, is $47 – an amount that is

in *excess* of what the CLEC is assumed to pay for the DSL UNE.[27] This selection of a CLEC cost that is less than the ILEC's cost appears to be nothing other than a clear violation of TELRIC pricing principles, which require network elements to be priced based on the forward-looking economic cost of providing the element. Of course, if competitive carriers are able to buy UNEs for less than the forward-looking cost of providing them, ILECs would have no incentive to invest. But by basing their business case on this flawed application of TELRIC pricing, Haring and Rohlfs have simply assumed their conclusion.[28]

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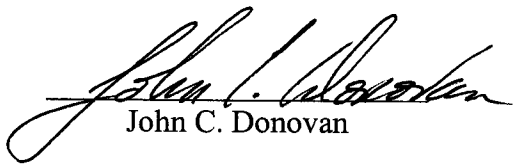
[27] Under TELRIC, income taxes are also recovered in UNE rates.

[28] We note that Haring and Rohlfs also claim that unbundling NGDLC raises costs because space must be provided so that CLECs can collocate at the remote terminal and receive only the distribution sub-loop. While providing for such collocation is certainly more costly than not, this peculiar unbundling architecture is not the only way to unbundle NGDLC, and it certainly is not the CLECs' preferred way. Rather, as explained in the accompanying Reply Declaration of Irwin Gerszberg, the most economical way (for both the CLEC and the incumbent) to unbundle DSL loops is to hand them off to the CLEC at the optical concentration device in the central office. Thus, Haring and Rohlfs have unfortunately fallen into the trap of accepting the ILECs' strawman view of cumbersome unbundling architectures. In reality, unbundling of NGDLC be done cheaply and efficiently – just not in the framework Haring and Rohlfs artificially choose to assume as the only way.

VERIFICATION

I, John C. Donovan , declare under penalty of perjury that the foregoing is true and correct. Executed on July 12 , 2002.



John C. Donovan

Exhibit 1

EXAMINING COMMERCE CAPITAL MARKETS' ANALYSIS OF REGIONAL BELL UNE PRICES

Correcting Faulty Measurements and Conclusions

Executive Summary

The analysis presented in a recent Commerce Capital Markets research report comparing UNEP prices to several measures of embedded per-line revenues and costs fails because it is "apples to oranges." The revenue, cost and lines data used in the report overstate severely embedded per-line revenues and costs attributable to the Bells' provision of UNEP-like services. When these data are corrected to be more accurate and more consistent with the goal of comparing the profitability of UNEP versus retail offers, the conclusion of the report that UNEP sales are substantially less profitable than retail sales, is refuted, and possibly reversed.

I. Overview

On April 15, 2002, Commerce Capital Markets issued a research report by analysts Anna-Maria Kovacs, Gregory Vitale and Wendy Burns titled, "The Status of 271 and UNE-Platform in the Regional Bells' Territories" (hereafter called the "CCMR").[1] While the actionable message of this research report is unclear, a brief examination of the report's data and methodologies shows that the CCMR's analysis is clearly faulty and cannot be a guide to commercial or regulatory decision-making.

The CCMR proposes to analyze the potential financial health of the Regional Bells' local wireline telecommunications business in a post-Section 271 environment in which they must provide a "platform" of unbundled network elements (called "UNEP") to competitive local exchange carriers ("CLECs"). To perform this analysis, the CCMR advances several financial measures:

1. Average revenue per "access line" (broken down between overall revenue and residential revenue)
2. Average embedded cost per "access line" (broken down between total cost and "cash" cost)
3. Price of the UNEP necessary to provide basic switched local telephone service and access to toll telephone services (developed at several different levels of monthly usage)

[1] This report appears to be an update of an earlier report issued by Commerce Capital Markets on November 12, 2001 and titled "Status & Implications of UNE-Platform in Regional Bell Markets." The major revisions in the current report appear to be its use of more recent 2001 data versus 2000 data, and its correction of several data errors that existed in the earlier version.

The CCMR then compares its measures of embedded revenues per line with its measures of embedded costs per line, and observes that on an embedded basis, the Regional Bells currently enjoy substantial margins of revenue over both cash and total costs. Then the CCMR compares UNEP prices to its calculated figures for per line overall revenues and residential revenues, and to its calculated figures for total and cash costs – and observes that UNEP prices fall short of each of these embedded revenue and cost figures – and suggests that this has dire financial implications for the Regional Bells.

But even if all of the CCMR's embedded revenue and cost figures were calculated accurately and consistently (and they are not), the above comparisons would provide no definitive guide for the business decision-making of a Regional Bell or a CLEC that purchases UNEP from the Bell. Nor would these comparisons tell a regulator whether it has set UNEP prices "too high" or "too low."

The following critique assumes that the purpose of the CCMR is to make reasonable comparisons between state-ordered UNEP prices and the historical embedded revenues and costs that have been incurred by the Regional Bells. Thus, to achieve its aim, the CCMR must: (a) calculate accurately embedded revenues, embedded costs and UNEP prices across states; and (b) ensure that the calculated embedded revenues and costs reflect the Regional Bells' revenues and costs from exactly the same collection of services that UNEP purchases enable a CLEC to offer and are stripped of retail expenses that are inapplicable to wholesale offers such as UNEP. Unfortunately, the CCMR analysis falls short on both accounts.[2]

II. Faulty embedded revenue and cost figures

The overall revenue figures presented in the CCMR appear to come from investor bulletins issued by the Regional Bells.[3] While these revenue data may be of value in some contexts, they are clearly inferior to the audited Part 32 accounting books that the Regional Bells must submit to the Federal Communications Commission ("FCC") in their ARMIS 43-01 reports. As indicated in Table 1, CCMR's gross revenue figures for the four Regional Bells exceed the 2001 ARMIS figures reported to the FCC by an average of 6.3%.

While the CCMR's apparent overstatement of gross revenues might be appropriate if these excess revenues are from services that the purchase of UNEP enables CLECs to provide, this seems very doubtful. Indeed, Verizon provides the following description of the components of its domestic wireline telecom revenues used in the CCMR:

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[2] In addition to this aim, the CCMR also contains lengthy discussions of its views about the statutory provisions of the Telecommunications Act, the nature of the regulatory processes used to establish UNE pricing and to grant interLATA Section 271 relief to the Regional Bells, and the prospects for UNE pricing and 271 relief in each state. While much of this additional CCMR analysis is also open to dispute, it will not be addressed in this comment.

[3] The data used in the CCMR generally all appear to be from 2001.

> local telephone services, including voice and data transport, enhanced and custom calling features, network access, directory assistance, private lines and public telephones ... long distance services, customer premises equipment distribution, data solutions and systems integration, billing and collections, Internet access services, research and development and inventory management services.[4]

On the roughly fifteen services that Verizon mentions, only three of them: local voice telephone service, enhanced and custom calling features, and network access are services included with its sale of UNEP.

Less over-inclusive are ARMIS revenue figures which include revenues from switched local and intraLATA toll services, vertical features, dedicated private line services, switched and special access services, data network services, etc. – but which exclude the interLATA long distance, data solution and systems integration, Internet access services, research and development and inventory management services that are included in the CCMR's data.[5] But even gross ARMIS revenues overstate substantially the revenues that could conceivably be addressed by CLEC purchases of UNEP. This is because gross ARMIS revenues include unregulated revenues from services such as voicemail and billing and collection, as well as uncollectible revenues.[6] If only unregulated and uncollectible revenues are removed from gross ARMIS revenues, and this more relevant net revenue figure is compared to the overall revenue figure that CCMR uses in its analysis, we see that the CCMR figure is at least 16.3% too high.

In contrast to its figures for overall revenues, the CCMR's figures for residential revenues appear to be completely contrived The CCMR describes its figure as follows, "we estimate average residential revenue for each RBOC to be equal to its break-even cash cost per line, excluding taxes." Although the CCMR admits that this figure is arbitrary, it excuses it "because it is the least arbitrary one we could devise." Given the many sources of published data on residential revenues, it is hard understand why the report would choose to use this arbitrary surrogate – especially when these sources suggest that embedded residential revenues are roughly 20% less than the report's surrogate figure.[7]

In any event, assume (*arguendo*) that the CCMR is correct in its assumption that residential revenues equal per-line average cash costs excluding taxes. How correct is CCMR's figure for per-line average cash costs? The Regional Bells' ARMIS 43-01

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[4] Verizon 2001 Annual Report, page 13.

[5] In addition, ARMIS revenues also tend not to include DSL data transport revenues and revenues related to customer premises equipment.

[6] In telecom services, uncollectible revenues generally are much more significant at the retail than at the wholesale level.

[7] Data on residential revenues are available from several sources including the TNS Telecoms Bill Harvesting studies, and the FCC's "Reference Book of Rates, Price Indices, and Expenditures for Telephone Service" at http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/ref99.pdf .

filings with the FCC also report figures for their total telecom cash expenses (with and without taxes). But the CCMR figures exceed these ARMIS data for total cash expenses by an average of 11.5%, and exceed ARMIS data for cash expenses minus taxes by an average of 21.9%. These differences are displayed in Table 1.

Thus, the CCMR's figure for embedded overall telecom revenues exceeds the Regional Bells' more relevant ARMIS figure by 16.3%, and the value that the CCMR attaches to its arbitrary measure for embedded residential telecom revenue exceeds the Regional Bells' ARMIS value for this arbitrary measure by 21.9%. Given the CCMR's reliance on overstated overall and "residential" revenue figures for its conclusion that the Regional Bells' earnings would shrink dramatically if they must substitute sales of UNEP at wholesale rates for their current retail sales of business and residential local service, it is clear that this conclusion is not well founded.

III. Faulty per-line figures

But even if the CCMR's figures for overall embedded revenues and costs were correct, the "per-line" revenues and costs computed in the report and compared with UNEP prices would be severely overstated. This is because the embedded revenues and costs collected in the CCMR's data are from a suite of telecom services that exceeds greatly the scope of services implicit in the CCMR's "access line" denominator.

To understand this, note that the Regional Bells offer a wide variety of telecom services. Sales of some of these services, such as switched local service, switched access service, switched toll service and vertical calling features, are directly related to sales of circuit-switched access lines. These are generally analog voice grade lines, CENTREX lines, ISDN "bearer" lines and PBX trunks.[8] A distinguishing feature of all of these switched lines is that they are connected to a Class 5 end-office switch. But in addition, the Regional Bells sell non-switched dedicated services and packet-switched data services. These include local private line and special access services, as well as frame relay and Internet Protocol services. Revenues and costs of all of these services are quite unrelated to the number of "switched" access lines that the carrier might also sell. Rather, these overall revenues are more closely related to the number of "total" access lines or the number of "equivalent" or "voice-grade equivalent" access lines sold by the Regional Bell. The difference between these two more comprehensive measures and just "switched" access lines is that "total" access lines also includes channelized high capacity non-switched lines like T-1 lines and DS-3 lines. And "equivalent" or "voice-grade equivalent" line counts additionally include the voice-grade equivalent transmission capacities of packet data and optical service facilities. Thus, "equivalent" lines is the

[8] See, SBC Investor Relations Financial and Growth Profile – Statistical Profile – Wireline Access Line Information (Yrly) as of 04/02 at:
http://www.sbc.com/investor_relations/financial_and_growth_profile/statistical_profile/0,5931,39,00.html .

most comprehensive measure that may be used to index the total volume of telecom services sold by the Bells and "total" lines is the next most comprehensive.[9]

Table 2 displays these several lines measures. As can be seen, the Regional Bells had only 166,221,000 switched access lines in 2001, but they had 232,327,000 total access lines and 345,118,000 equivalent access lines.[10] Thus, the CCMR uses a lines measure that is between 28.5% and 51.8% less than more comprehensive available measures.

But the embedded telecom revenues and costs that are attempted to be measured by the figures in the CCMR (and are measured more accurately by figures reported in ARMIS) include Regional Bell revenues and costs associated with sales of nonswitched lines and data services in addition to the revenues earned by their sales of "switched" access lines. Thus, to be a meaningful depiction of the average amount of revenue that a carrier may expect to earn (or cost that it may have incurred) from the sale of a particular type of line, either:

- the embedded revenue and cost figures need to be *reduced* by the amount of non-circuit-switched revenues and costs that these embedded figures include; *or*
- the over-inclusive embedded revenue and cost figures need to be divided by more comprehensive lines measures such as the number of "equivalent" lines sold by the carrier.[11]

The first alternative is potentially the most appropriate because the end goal is to compare the computed embedded revenue and cost per line figures with UNEP prices – and UNEP-based services map most closely to basic circuit-switched services. But this alternative is extremely difficult to implement because the Regional Bells generally do not provide embedded cost and revenue information that is adequate to reliably separate the revenues and costs of their circuit-switched services from their revenues and costs of all of their telecom services. Thus, we must use the second alternative to develop our best estimates of per-line embedded revenues and costs that are most comparable with UNEP prices.

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[9] As SBC points out, "Given the growing importance and magnitude of data revenue streams and circuit volumes, access line growth has become less than a comprehensive measure of strength in the market. The development of Voice Grade Equivalents (VGEs), which include data circuits, provides a consistent and quantifiable means for bridging the gap between access lines and data services." *Ibid.*

[10] Because the CCMR appears to average 4Q2000 and 4Q2001 line counts to create its access line figures for 2001, we use the same convention in developing 2001 total and equivalent access lines.

[11] A less desirable alternative would be to divide these over-inclusive embedded revenue and cost figures just by "total" access lines. But this would still result in a mismatch between numerator and denominator because the embedded revenue and cost figures include revenues and costs associated with packet data services such as frame relay, Internet Protocol and optical capacity services that are not indexed to "total" lines.

Unfortunately, the CCMR chooses neither of these alternatives. It does not extract the non-circuit-switched revenues and costs from its embedded figures, nor does it divide its non-reduced revenues and costs by "equivalent" lines. Rather, it simply divides its non-reduced revenues and costs by a figure it calls "access lines." But, the CCMR's "access line" figure is just the Bells' number of "switched" access lines – and thus understates severely the number of lines that the Regional Bells actually sell to generate the overall revenues and costs in question. In particular, Table 3 demonstrates that by choosing to use switched access lines as its per-line denominator, the CCMR overstates revenues and costs per line by 51.8% relative to the most comprehensive lines figure ("equivalent" lines), and by 28.5% relative to the next most comprehensive lines figure ("total" lines).

Thus to recap. Because the CCMR uses overly inclusive revenue and cost data and fails to exclude nonUNEP-related services from these data, it overstates Regional Bell embedded revenues that might be addressable by UNEP-based CLECs by at least 16.3%.[12] Then CCMR divides these overstated revenues and costs by a lines denominator that is understated by 28.5% to 51.8%. This combination of an overstated numerator and an understated denominator suggests that rather than a Regional Bell average of $57.91 in embedded revenues per line as stated by the CCMR, a more accurate estimate of relevant embedded per-line revenues would be $35.62 on a total access line basis and $23.98 on an even more consistent equivalent access line basis. Thus, the CCMR overstates the relevant embedded per-line revenues of the Regional Bells by between 62.6% and 141.5%.

And the CCMR makes even larger overstatements of Regional Bell embedded cash costs (without taxes) per line – the CCMR's proxy for embedded residential line revenues. Because the CCMR's figure for this proxy exceeds ARMIS values for the same proxy by 21.9%, when this overstated cost figure is divided by the CCMR's understated switched access line denominator, it results in an inflated value of $33.77. But if the more correct ARMIS cost value is used and divided by more consistent figures for total access lines or equivalent access lines, this per-line cost figure becomes either $19.83 or $13.35, respectively. Thus, CCMR overstates its proxy for embedded residential per-line revenues of the Regional Bells by between 70.3% and 153.0%.

IV. Faulty comparisons with UNEP

Key to the CCMR's financial analyses is its comparison of its measures of per-line embedded revenues and costs to its measure of UNEP prices. Although simplified, the CCMR's figures for UNEP rates are reasonably accurate on a nationwide basis.[13].

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[12] Note that because even these revenues and costs still include revenues and costs associated with services that are not subject to unbundling, such as billing and collection, this is a conservative estimate of the CCMR's overstatement of embedded revenues and costs.

[13] In particular, the UNEP prices presented in this Commerce Capital Markets report appear to be more accurate than those that were presented in the earlier Commerce Capital Markets report that was issued November 12, 2001. But because patterns of local, intraLATA toll and interLATA toll traffic can vary significantly between states, CCMR's analysis that ascribes similar usage profiles (although not always the

These UNEP rates provide a model for the revenues that a Regional Bell Company may expect to receive if it sells a UNEP package to a CLEC.

Unfortunately, the comparisons that the CCMR offers between these UNEP rates and its various measures of embedded per-line revenues and costs are specious. Because of the CCMR's use of overstated numerators for embedded revenues and costs that might be linked with UNEP, along with understated lines denominators, the CCMR predictably shows UNEP prices to be substantially less that its various embedded measures of revenues and costs per line. In particular:

- The CCMR's figures for embedded per-line total revenues addressable by UNEP are overstated by 62.6% to 141.5%, before any further frailties in the CCMR's data and analysis are considered. Thus, while the CCMR claims that UNEP prices amount to only 39% of an average Regional Bell Company's overall revenues, if revenues are measured more correctly and divided by more consistent measures of lines, this ratio of UNEP price to embedded revenue rises to between 63% and 93%.

- The CCMR's figures for embedded per-line "residential" revenues (actually, cash operating expenses minus taxes) addressable by UNEP are overstated by 70.3% to 153.0%, before any further frailties in the CCMR's data and analysis are considered. Thus, while the CCMR claims that UNEP prices amount to only 66% of an average Regional Bell Company's "residential" revenues, if the CCMR's proxy for "residential" revenues is measured more correctly and divided by more consistent measures of lines, this ratio of UNEP price to "residential" revenue rises to between 113% and 167%.

- The CCMR's figures for embedded per-line cash operating expenses (including taxes) are overstated by 55.8% to 131.5%, before any further frailties in the CCMR's data and analysis are considered. Thus, while the CCMR claims that UNEP prices amount to only 58% of an average Regional Bell Company's cash operating expenses, if these cash expenses are measured more correctly and divided by more consistent measures of lines, this ratio of UNEP price to embedded cash expense rises to between 91% and 135%.

Thus, even if one presumes that the CCMR's generic embedded measures are germane to determining the effects on Regional Bell profitability from their offer of UNEP, just improving the data used to compute these generic embedded measures undermines the CCMR's claim that UNEP is priced "dramatically," "radically" or "significantly" below embedded costs. But as even the CCMR points out, there are many reasons why UNEP *should* be priced below the Regional Bells' embedded costs (and certainly their embedded revenues). This is because UNEP is a wholesale service that incorporates little to no retail level costs. The Regional Bells' avoidable retail expenses associated with

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same total usage volume) to every state cannot be a completely accurate view as to the UNEP revenues that a Bell Company will receive in any particular state.

switched services amount are generally about $6 per switched access line.[14] If an average figure of $6.06 per line is assumed, and subtracted from the Regional Bells' embedded net revenues and costs, the ratio of their UNEP prices to their net revenues rises to between 75% and 125%, the ratio of their UNEP prices to their "residential revenues" rises to between 121% to 214%, and the ratio of their UNEP prices to their total cash costs rises to between 162% to 306%.[15]

Finally, even if the CCMR's generic embedded measures are useful, and even if they are calculated using appropriate data, and even if it is reasonable to assume that the Regional Bells will avoid none of their embedded retail costs if they convert retail line sales into UNEP sales, there is still no reason to presume that UNEP prices should not be at a discount to Regional Bell revenues and costs. This is because UNE prices are intended to be forward-looking – while embedded costs may reflect technologies and equipment purchase prices that could be either more or less costly than those currently being experienced on a forward-going basis.[16]

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[14] These figures may be calculated by collecting year 2001 ARMIS 43-03 Reports, Table I, column i, for direct retail accounts (6610, Marketing, and 6620, Service Support), plus the retail share of overhead accounts (6120, General Support, 6710, Executive and Planning, and 6720, General and Administrative). The latter are computed by applying the direct retail share of operating expenses, excluding overhead accounts, depreciation and access expenses to these overhead accounts.

[15] Although the CCMR notes that the Regional Bells will not have to provide retail services for their sales of UNEP to CLECs, and notes that regulatory commissions have found Regional Bell embedded costs to contain substantial levels of avoidable retail costs, it assumes that the Regional Bells will choose not to cut these "avoidable" costs from their cost structures as they convert retail lines to UNEPs. This seems rather odd since many of these expenses, such as for customer billing and account inquiry, are almost completely variable – even in the very short run.

[16] Indeed it is curious that the CCMR should discount the importance of forward-looking cost structures for investor decision-making. Everything else equal, it would appear to be more valuable to know how a firm's revenues will compare with its costs tomorrow than to know how they compared last year. See, "Investors Focus on Future Results and Forgive Past Performance," *Wall Street Journal*, April 19, 2002.

V. Conclusions

Properly developed, available data do not suggest that Regional Bell UNEP prices are "too" low. Rather, these data show that the UNEP prices that a Regional Bell would receive from the sale of wholesale lines to CLECs would be similar, or even higher in profitability to the lines that they currently sell at retail to residences and businesses. This is in contrast to the conclusions drawn in the CCMR based on improper data and analysis that suggest UNEP prices are at excessive discounts to embedded Regional Bell revenues and costs.

R. N. Clarke
May 24, 2002

TABLE 1	Source	Regional Bell Company BellSouth	Qwest	SBC	Verizon	Total Regional Bell
Embedded Financial Measures ($M)						
Gross Telecom Revenue	CCMR	$19,071	$12,675	$40,687	$43,078	$115,511
	ARMIS	$18,030	$11,888	$38,278	$40,496	$108,691
	CCMR overstatement	*5.8%*	*6.6%*	*6.3%*	*6.4%*	*6.3%*
Nonregulated Revenue	ARMIS	-$736	-$632	-$3,159	-$2,344	-$6,871
Uncollectibles	ARMIS	-$362	-$181	-$892	-$1,087	-$2,522
Net Telecom Revenue	ARMIS	$16,931	$11,076	$34,226	$37,065	$99,298
	CCMR overstatement	*12.6%*	*14.4%*	*18.9%*	*16.2%*	*16.3%*
Cash Operating Expenses	CCMR	$11,753	$7,679	$27,728	$28,977	$76,137
(with taxes)	ARMIS	$10,881	$7,012	$24,576	$25,817	$68,286
	CCMR overstatement	*8.0%*	*9.5%*	*12.8%*	*12.2%*	*11.5%*
Cash Operating Expenses	CCMR	$9,857	$6,540	$25,246	$25,715	$67,358
(without taxes)	ARMIS	$8,578	$5,704	$19,542	$21,447	$55,271
	CCMR overstatement	*14.9%*	*14.7%*	*29.2%*	*19.9%*	*21.9%*

TABLE 2	Source	Regional Bell Company BellSouth	Qwest	SBC	Verizon	Total Regional Bell
Lines Measures (in 000s)						
"Access" Lines	CCMR	25,665	17,938	60,391	62,227	166,221
"Switched" Access Lines	RBOC IB	25,665	17,938	60,391	62,227	166,221
"Total" Access Lines	ARMIS *	38,640	23,994	85,294	84,399	232,327
	CCMR understatement	*-33.6%*	*-25.2%*	*-29.2%*	*-26.3%*	*-28.5%*
"Equivalent" Access Lines	RBOC IB	59,715	53,285	107,613	124,505	345,118
	CCMR understatement	*-57.0%*	*-66.3%*	*-43.9%*	*-50.0%*	*-51.8%*

* Data for "Total" Access Lines is sum of the Regional Bell Investor Bulletin figures for switched access lines and their ARMIS 43-08 figures for non-switched special access lines.

TABLE 3	Source	Regional Bell Company BellSouth	Qwest	SBC	Verizon	Total Regional Bell
Embedded Financial Measures Per Line						
Gross Revenue / SwcAL	CCMR	$61.92	$58.88	$56.14	$57.69	$57.91
Net Revenue / TotalAL	ARMIS *	$36.51	$38.47	$33.44	$36.60	$35.62
CCMR overstatement		*69.6%*	*53.1%*	*67.9%*	*57.6%*	*62.6%*
Net Revenue / EquivAL	ARMIS	$23.63	$17.32	$26.50	$24.81	$23.98
CCMR overstatement		*162.1%*	*239.9%*	*111.8%*	*132.5%*	*141.5%*
Cash Exp.(w/ tax) / SwcAL	CCMR	$38.16	$35.67	$38.26	$38.81	$38.17
Cash Exp.(w/ tax) / TotalAL	ARMIS *	$23.47	$24.35	$24.01	$25.49	$24.49
CCMR overstatement		*62.6%*	*46.5%*	*59.3%*	*52.2%*	*55.8%*
Cash Exp.(w/ tax) / EquivAL	ARMIS	$15.18	$10.97	$19.03	$17.28	$16.49
CCMR overstatement		*151.3%*	*225.3%*	*101.0%*	*124.6%*	*131.5%*
Cash Exp.(w/o tax) / SwcAL	CCMR	$32.01	$30.38	$34.84	$34.44	$33.77
Cash Exp.(w/o tax) / TotalAL	ARMIS *	$18.50	$19.81	$19.09	$21.18	$19.83
CCMR overstatement		*73.0%*	*53.4%*	*82.5%*	*62.6%*	*70.3%*
Cash Exp.(w/o tax) / EquivAL	ARMIS	$11.97	$8.92	$15.13	$14.35	$13.35
CCMR overstatement		*167.4%*	*240.6%*	*130.2%*	*139.9%*	*153.0%*

TABLE 4	Source	Regional Bell Company BellSouth	Qwest	SBC	Verizon	Total Regional Bell
UNEP Measures						
UNEP per-line price	CCMR	$26.06	$28.21	$21.54	$19.81	$22.31

* Data for "Total" Access Lines is sum of the Regional Bell Investor Bulletin figures for switched access lines and their ARMIS 43-08 figures for non-switched special access lines.

TABLE 5	Source	Regional Bell Company BellSouth	Qwest	SBC	Verizon	Total Regional Bell
Ratios of UNEP to the Following Embedded Per-Line Financials						
Gross Revenue / SwcAL	CCMR	42%	48%	38%	34%	39%
Net Revenue / TotalAL	ARMIS *	71%	73%	64%	54%	63%
Net Revenue / EquivAL	ARMIS	110%	163%	81%	80%	93%
Cash Exp. (w/ tax) / SwcAL	CCMR	68%	79%	56%	51%	58%
Cash Exp.(w/ tax) / TotalAL	ARMIS *	111%	116%	90%	78%	91%
Cash Exp.(w/ tax) / EquivAL	ARMIS	172%	257%	113%	115%	135%
Cash Exp. (w/o tax) / SwcAL	CCMR	81%	93%	62%	58%	66%
Cash Exp.(w/o tax) / TotalAL	ARMIS *	141%	142%	113%	94%	113%
Cash Exp.(w/o tax) / EquivAL	ARMIS	218%	316%	142%	138%	167%

TABLE 6	Source	Regional Bell Company BellSouth	Qwest	SBC	Verizon	Total Regional Bell
Ratio of UNEP to Embedded Per-Line Financials Minus Avoidable Switched Retail Costs of:						***$6.06***
Gross Revenue / SwcAL	CCMR	47%	53%	43%	38%	43%
Net Revenue / TotalAL	ARMIS *	86%	87%	79%	65%	75%
Net Revenue / EquivAL	ARMIS	148%	250%	105%	106%	125%
Cash Exp. (w/ tax) / SwcAL	CCMR	81%	95%	67%	60%	69%
Cash Exp.(w/ tax) / TotalAL	ARMIS *	150%	154%	120%	102%	121%
Cash Exp.(w/ tax) / EquivAL	ARMIS	286%	575%	166%	177%	214%
Cash Exp. (w/o tax) / SwcAL	CCMR	100%	116%	75%	70%	81%
Cash Exp.(w/o tax) / TotalAL	ARMIS *	209%	205%	165%	131%	162%
Cash Exp.(w/o tax) / EquivAL	ARMIS	441%	986%	237%	239%	306%

* Data for "Total" Access Lines is sum of the Regional Bell Investor Bulletin figures for switched access lines and their ARMIS 43-08 figures for non-switched special access lines.